

What is Claimed is:

1. A resin-reinforced silicone composition curable by exposure to radiation in the electromagnetic spectrum, exposure to moisture and combinations thereof, comprising:

(a) a polyorganosiloxane with reactive groups selected from the group consisting of photocurable groups, moisture curable groups, and combinations thereof;

(b) a silicone resin selected from

(i) those formed from at least one silane within the formula $R^1_m R^2_p Si(X)_{4-(m+p)}$ I, where R^1 is a (meth)acrylate functional group or a hydrolyzable group, and R^2 may be the same or different and may be selected from the group consisting of monovalent ethylenically unsaturated radicals, hydrogen, C_{1-12} alkyl, C_{6-12} aryl, C_{7-18} alkylaryl, and hydrolyzable groups, X is a hydrolyzable group, m is an integer from 1 to 3, and $m+p$ is an integer from 1 to 3;

(ii) those formed from at least one silane within the formula $R^3_q Si(X)_{4-q}$ II, where R^3 may be the same as or different from R^2 above and may be selected from monovalent ethylenically unsaturated radicals, hydrogen, C_{1-12} alkyl, C_{6-12} aryl, C_{7-18} alkylaryl, and q is an integer from 1 to 3, reacted with at least another silane within the formula of $R^4_r R^5_s Si(X)_{4-(r+s)}$ III, where R^4 and R^5 may be the same or different and may be selected from monovalent ethylenically unsaturated radicals, hydrogen, C_{1-12} alkyl, C_{6-12} aryl, C_{7-18} alkylaryl, r is an integer from 1 to 3, and $r+s$ is an integer from 1 to 3, provided the silicone resin formed contains at least some hydrolyzable group, X ; and combinations thereof; and

(c) a cure catalyst selected from the group consisting of a photoinitiator component; a moisture curing catalyst, and combination thereof.

2. A resin-reinforced silicone composition curable by exposure to radiation in the electromagnetic spectrum, exposure to moisture and combinations thereof, comprising:

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(a) a polyorganosiloxane with reactive groups selected from the group consisting of photocurable groups, moisture curable groups, and combinations thereof;

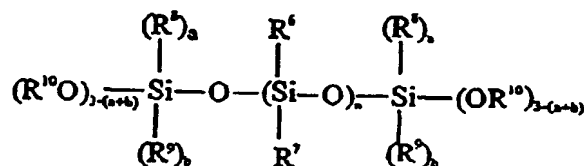
(b) a silicone resin formed as a reaction product of at least one silane within the formula $R^1_n R^2_p Si(X)_{4-(n+p)}$ I, and at least one other silane within the formula, $R_n Si(X)_{4-n}$ IV, wherein R may be the same or different and selected from the group consisting of hydrogen, C₁₋₁₂ alkyl, C₆₋₁₂ aryl, C₇₋₁₈ arylalkyl, C₇₋₁₈ alkylaryl, haloalkyl, and haloaryl, X is a hydrolyzable functionality, and n is an integer from 0 to 3; and

(c) a cure catalyst selected from the group consisting of a photoinitiator component; a moisture curing catalyst, and combination thereof.

3. The composition of Claim 1 or 2, wherein the photocurable group is selected from the group consisting of acrylate, methacrylate and glycidoxyl groups.

4. The composition of Claim 1 or 2, wherein the acrylate group is acryloxypropyl and the methacrylate group is methacryloxypropyl.

5. The composition of Claim 1 or 2, wherein the polyorganosiloxane is within the formula:



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wherein R^6 , R^7 , R^8 and R^9 may be the same or different and are alkyl, alkenyl, aryl, and (meth)acryl, provided that at least one of R^6 , R^7 , R^8 or R^9 is (meth)acryl, having up to 10 carbon atoms (C_{1-10}), or substituted versions thereof; R^{10} is alkyl having up to 10 carbon atoms; n is an integer between about 150 and 1,200; a is 1 or 2; b is 0, 1 or 2; and $a+b$ is 1, 2 or 3.

6. The composition of Claim 1 or 2, wherein the moisture curable group is an alkoxy group.

7. The composition of Claim 1 or 2, wherein the photoinitiator component is selected from the group consisting of substituted or unsubstituted benzoin, benzophenone, dialkoxybenzophenones, Michler's ketone, diethoxyacetophenone and combinations thereof.

8. The composition of Claim 6, wherein the photoinitiator component is diethoxyacetophenone.

9. The composition of Claim 1 or 2, wherein the moisture curing catalyst is selected from the group consisting of organic titanium derivatives, organic tin derivatives and combinations thereof.

10. The composition of Claim 1 or 2, wherein the photocurable group is reactive when exposed to elevated temperature conditions.

11. The composition of Claim 1 or 2, further comprising a reactive diluent component.

12. The composition of Claim 11, wherein the reactive diluent is a member selected from the group consisting of vinyl-terminated polydimethylsiloxane, vinyl-terminated silicone resin, and combinations thereof.

13. The composition of Claim 2, wherein the at least one first silane is present in an amount within the range of from about 1 to about 10 mole% and the at least one other silane is present in an amount within the range of from about 90 to about 99 mole%, of the total of the silanes.

14. The composition of Claim 1 or 2, wherein the polyorganosiloxane is present in an amount within the range of from about 15 to about 85 mole% of the total composition.

15. The composition of Claim 1 or 2, wherein the photoinitiator component is present in an amount within the range of from about 0.1 to about 5 mole% of the total composition.

16. The composition of Claim 1 or 2, wherein the moisture curing catalyst is present in an amount within the range of from about 0.1 to about 5 mole% of the total composition.

Sub A1 17. Irradiated reaction products of the composition of anyone of Claims 1-16.

18. Moisture cure reaction products of the composition of any one of Claims 1-16.

19. The reaction products of Claim 17, further cured by moisture.

Sub A2 20. The reaction products of any one of Claims 17-19, further cured by heat.

21. A method of curing a silicone composition to form an elastomer, the steps of which comprise:

- a. applying a silicone composition of any one of Claims 1-16 to a substrate; and
- b. irradiating the substrate with UV irradiation sufficient to substantially cure the composition.

22. A method of curing a silicone composition to form an elastomer, the steps of which comprise:

- a. applying a silicone composition of any one of Claims 1-16 to a substrate; and
- b. exposing the composition to moisture sufficient to substantially cure the composition.

23. A method of curing a UV/moisture dual curing silicone composition to form an elastomer, the steps of which comprise:

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